

# HOW VIRTUAL REALITY IS SHAPING THE CONSTRUCTION INDUSTRY?

New construction technology is rapidly shifting the way construction is done. Virtual Reality (VR) is one new technology that is changing the construction industry to improve the design, safety, training, and to avoid costly overruns.



## WHAT IS VIRTUAL REALITY?

Virtual Reality is the computer-based simulation of the artificial/real world, which can be experienced via special electronic equipment and sensors.

In the Construction Industry, VR is used as the upgraded level of 3D modeling (producing a 3D digital representation of any object or surface). It allows direct user interaction in the virtual space that gives a clear understanding of construction.

**Fact:** 43% of manufacturing companies say VR will become mainstream in their organization within the next three years. (Source: Capgemini)



## TOP INDUSTRIES USING VIRTUAL REALITY



## MAJOR CHALLENGES OF THE CONSTRUCTION INDUSTRY

Since years, the Construction industries are facing numerous challenges that need an effective solution. The major problems are:

- Labor Shortages
- Immobile Productivity Levels
- Working Safety
- Technology Adoption
- Poor Project Performance
- Risk Assessment During the Design Stages
- Identification of Layout Conflicts



## BENEFITS OF VIRTUAL REALITY IN THE CONSTRUCTION INDUSTRY

With Virtual Reality, not only the Challenges of Construction Industry are overwhelmed; instead, many other benefits are offered.

- Quick 3D Modeling
- Real-Time Collaboration
- Complete Transparency
- Reducing Rework
- Improving Safety
- Lowering Labor Costs
- Meeting Timelines
- Resolving Issues Faster
- Increasing Quality



## HOW VIRTUAL REALITY WORKS FOR NEW BUILDING CONSTRUCTION?

Virtual Reality is the new technology used with Building Information Modelling (BIM) to enhance the opportunities in 3D modeling.

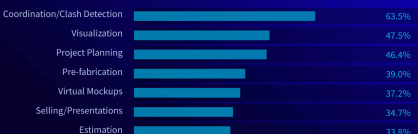
BIM files are optimized for Games Engines (Unity, Autocad, Unreal, etc.) to develop a virtual environment for the building.

Once the 3D environment is developed, it becomes easy for you to use VR Gadgets (Head tracking & eye-tracking technology) to look into the virtual space and experience it.

## HOW VIRTUAL REALITY WORKS FOR EXISTING BUILDING CONSTRUCTION?

- PHASE 1 SCANNING THE BUILDING**  
Scanners are placed around the Building that uses the laser light to calculate/record the building dimensions and the RGB values from all corners. This entire data is collected with a speed of about 1 million dots per second.
- PHASE 2 TRANSFORMING DOTS INTO LINES**  
All the recorded dots are connected via Control Network. All the dots (called as survey points) are placed together for overlapping to create the virtual architecture of the building.
- PHASE 3 DATA COLLECTION**  
In the data collection stage, all your data is sorted and is prepared for 3D Modelling. Random dots are removed to clean the virtual architecture and checked for accuracy & required tolerance.
- PHASE 4 DEVELOPMENT OF 3D MODEL**  
Building Information Modelling (BIM) is used to trace the building, using the data and client's requirements. The final 3D model then undergoes quality checks. This is then shared with the client for feedback.
- PHASE 5 FINAL OPTIMIZATION & DELIVERY**  
The final stage includes transforming your BIM building mode into Virtual Reality software for better visualization of the construction. Modifications are done as requested by the client.

## USAGE OF BIM & VDC IN CONSTRUCTION INDUSTRY



## TOP 5 VIRTUAL REALITY SOFTWARE



\*BIM: Business Information Modelling

\*VDC: Virtual Design and Construction

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